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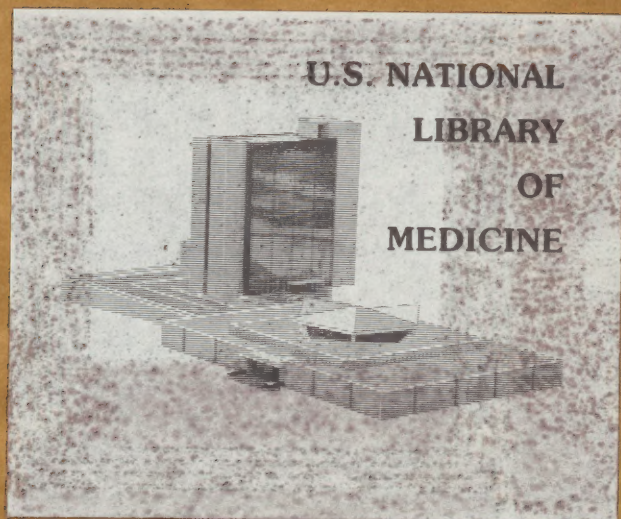
U. S. WAR DEPT. TECHNICAL MANUAL 8-291

OCCUPATIONAL THERAPY

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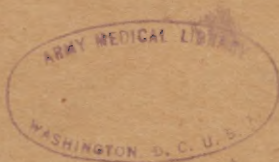
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TM 8-291

WAR DEPARTMENT TECHNICAL MANUAL

OCCUPATIONAL THERAPY



WAR DEPARTMENT • DECEMBER 1944

OCCUPATIONAL THERAPY



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WAR DEPARTMENT
Washington 25, D. C., 15 December 1944

TM 8-291, Occupational Therapy, is published for the information and guidance of all concerned.

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BY ORDER OF THE SECRETARY OF WAR:

OFFICIAL:

J. A. ULIO
Major General
The Adjutant General

G. C. MARSHALL
Chief of Staff

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For explanation of symbols, see FM 21-6

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CHAPTER 1

INTRODUCTION

Section I. GENERAL

Place in series. This is one of three manuals on reconditioning. They are:

TM 8-290 Educational Reconditioning

TM 8-291 Occupational Therapy

TM 8-292 Physical Reconditioning

1. GENERAL. a. When a man enters the Army, the military training program prepares him physically and mentally for his duties as a soldier. Military drill, marches, and physical training produce good physical condition and develop endurance and stamina. Special courses, maneuvers, and field problems provide information and knowledge to enable him to perform successfully the duties of a soldier. When his training is completed, he should be in good physical condition and possess the mental attitudes necessary to the effective soldier.

b. The soldier who has been wounded or rendered inactive because of prolonged illness loses the efficiency that has been developed. His physical strength deteriorates. Concern for himself, worry over personal affairs, and the anxiety that accompanies long convalescence, contribute to a loss of confidence which may result in apathy and indifference. These attitudes actually retard recovery, and often produce unfortunate mental states which result in ineffectual service and, in some instances, maladjustment to military or civil environment.

c. The critical personnel needs of the armed forces and war industries demand maximum conservation of manpower. Each day that a patient's recovery is delayed represents a loss of man hours in support of the war effort. If the convalescent soldier is to realize the greatest benefit of army medical service, his physical, mental, and emotional needs must be considered. Recognizing this responsibility to the soldier and to the war effort, The Surgeon General has established reconditioning as a part of professional medical care.

Section II. MISSION OF RECONDITIONING

2. MISSION OF RECONDITIONING. The purpose of the Reconditioning Program is to accelerate the return to military duty of convalescent patients in the highest state of physical and mental efficiency consistent with their capacities and the type of duty to which they are being returned. Or, if the soldier is disqualified for further military service, the Reconditioning Program must provide for his return to civilian life in the highest possible degree of physical fitness, well oriented in the responsibilities of citizenship and prepared to adjust successfully to social and vocational pursuits. The mission is accomplished by a coordinated program of Educational Reconditioning, Physical Reconditioning, and Occupational Therapy.

CHAPTER 2

AN OVERVIEW OF OCCUPATIONAL THERAPY

Section I. DEFINITION OF OCCUPATIONAL THERAPY

3. DEFINITION OF OCCUPATIONAL THERAPY. Occupational therapy is that form of treatment characterized by assignment to purposeful physical tasks and prescribed by a medical officer. It may be prescribed for restoration of function to injured or diseased muscles and joints; for controlled activity for nervous or mental disorders; for readjustment attending chronic diseases; for reeducation in permanent disabilities and for purposeful utilization of leisure time.

4. PURPOSE. To provide functional and constructive activity under medical supervision for the purpose of hastening the recovery of individual patients.

5. SCOPE. There are four main types of occupational therapy that are applied in the convalescent treatment of disease or injury. These are diversional therapy, functional therapy, industrial therapy, and prevocational training in shop experience.

a. Diversional therapy includes the simple arts and crafts, hobbies, and allied "handicraft" activities which serve to divert the mind from preoccupation with illness. A wide range of interests may be employed such as, dramatics, music, photography, the graphic arts, electricity, woodworking, leather working, radio and motor mechanics, and avocational pursuits.

b. Functional therapy has a prescribed purpose. It is directed toward the restoration of function in injured or diseased muscles and joints, improving general physical condition, and contributing to the return of physical and mental health.

c. Industrial (work) therapy utilizes the every day work situations. The patient is assigned to perform some useful work with a definite goal in mind. For example, the patient with a shoulder injury who needs to strengthen his muscles may be directed to saw wood or paint high surfaces. He performs useful work for the hospital, but also aids himself by strengthening his atonic arm and shoulder girdle muscles and indirectly by improving his general physical condition.

d. Prevocational therapy comprises those prescribed exploratory shop processes which are planned to develop aptitudes and interests in a specific occupation to be used as a guide to vocational training under the Veterans' Administration.

6. VALUES THAT RESULT FROM USE OF OCCUPATIONAL THERAPY*.

a. **Physical.** Occupational therapy aids in the restoration of function to in-

**Manual of Occupational Therapy*, American Medical Association, 1943 reprinted from *War Medicine*.

jured or diseased joints, nerves, tendons and muscles, restores self confidence, and develops physical and mental coordination.

b. Mental. The mental values that accrue from occupational therapy serve to divert the mind from thoughts of illness, encouraging healthy minds by combatting restlessness and boredom. Mental distress is eased, the attention is aroused, and opportunity for self-expression and for development of initiative is provided.

c. Social. Social values of occupational therapy result from the development of group cooperation, providing opportunity for social contacts in normal activities through a ready means of socialization. The morale of patients in the wards and in the hospital is raised.

d. Economic. The economic effects from occupational therapy are incidental to the primary purpose. Means are provided whereby evaluation of the disability in terms of vocational requirements is afforded, and whereby a measure of work tolerance is established.

Section II. ADMINISTRATION OF AN OCCUPATIONAL THERAPY DEPARTMENT

7. STAFF ORGANIZATION. The work of the occupational therapy department will be under medical direction. The success of therapy is related to the extent of interest of the responsible medical officer and occupational therapy staff.

a. For administrative purposes, the Chief of the Reconditioning Service, a medical officer, will direct and correlate the activities of occupational therapy with the physical and educational activities of the Reconditioning Program.

b. In functional occupational therapy with physical injuries, the therapist will work in close cooperation with the medical officer in charge of the Physical Therapy Department, or under the direction of the Chief of the Orthopedic Section.

c. In the treatment of neuropsychiatric patients, the therapist will work in close cooperation with the Chief of the Neuropsychiatric Service.

8. PERSONNEL. The value and effectiveness of occupational therapy depend on the training and experience of the therapists. Occupational therapists must have a sound concept of the conditions treated and the techniques to be employed. There must be sufficient understanding of medical and surgical disorders and of the mental reaction of individuals in order that medical officers' prescriptions be intelligently executed. As a general rule, one occupational therapist should be provided for each 250 hospital patients.

9. FACILITIES. Adequate space will be provided in all hospitals that operate occupational therapy shops. Well-lighted rooms are desirable on or above the ground level. Two shops will usually be necessary, a general shop for functional work with physical injuries and a neuropsychiatric shop, located within or near the neuropsychiatric section of the hospital. Plans have been prepared by The Surgeon General's Office to cover alterations or construction where necessary.

10. SUPPLY AND EQUIPMENT. All items of basic equipment and additional maintenance supplies issued for use in occupational therapy departments

will be furnished to hospitals through Medical Department supply channels, Supply List No. 9N464.

11. RECONDITIONING CLASSES. a. Occupational Therapy for Class 4 patients will consist chiefly of diversional activities. In some instances it will be necessary to treat functional cases who are still confined to bed. Lap-boards or specially designed bed tables make it possible to use projects that otherwise would not be practical.

b. Occupational Therapy for Class 3 patients will consist chiefly of assignments of patients to work in either the functional or neuropsychiatric shop or in light work about the hospital wards.

c. Classes 2 and 1 will also benefit from occupational therapy. Woodworking or motor mechanics, hobby shop activities, and diversional activities or industrial (work) therapy will be prescribed.

CHAPTER 3

FUNCTIONAL OCCUPATIONAL THERAPY

12. DEFINITION. Functional occupational therapy is that type of work treatment prescribed by a medical officer for the restoration of function to impaired muscles and joints. Secondary purposes of treatment include the improvement of general physical condition, the increase of work tolerance, and the stimulation of mental acuity through interesting activity.

13. SCOPE. There are three main disability groups, which may occur separately or in combination, to be considered in the application of functional occupational therapy:

- a. Joint limitation.
- b. Muscle weakness.
- c. Incoordination.

14. TREATMENT. Functional occupational therapy is based on the fundamental principles of physical treatment as applied in physical medicine.

- a. Graded force for joint limitation.
- b. Graded resistance for muscle weakness.
- c. Muscle reeducation for incoordination.

15. COORDINATION WITH PHYSICAL THERAPY. Physical therapy uses the modalities of heat, light, massage, exercise, water, and electricity for their therapeutic effect upon diseased or injured tissues. For the same purpose occupational therapy applies such activities as carpentry, printing, radio repair, fly-tying, and gardening. It has been demonstrated that when occupational therapy is used in conjunction with physical therapy motion returns more rapidly than when either is used alone. An accepted form of coordinated treatment is: physical therapy in as early a stage as possible accompanied by occupational therapy when active motion is indicated. When maximum benefit has been obtained from physical therapy that treatment is discontinued and occupational therapy continues with increased grading of activity and resistive motion.

16. GENERAL PRECAUTIONS. a. **Prescription.** Activity needs of the patient will not be treated without adequate prescription from the medical officer.

b. **Posture.** Fundamental posture principles will be observed to insure good body mechanics.

c. **Compensation.** Achievement of motion desired is determined by the position of the work in relation to the patient. Compensation, or the substitution of uninvolved parts for the part being treated, must be avoided by the teaching of correct motion. In cases of permanent disability, however, instruction in substitution is indicated.

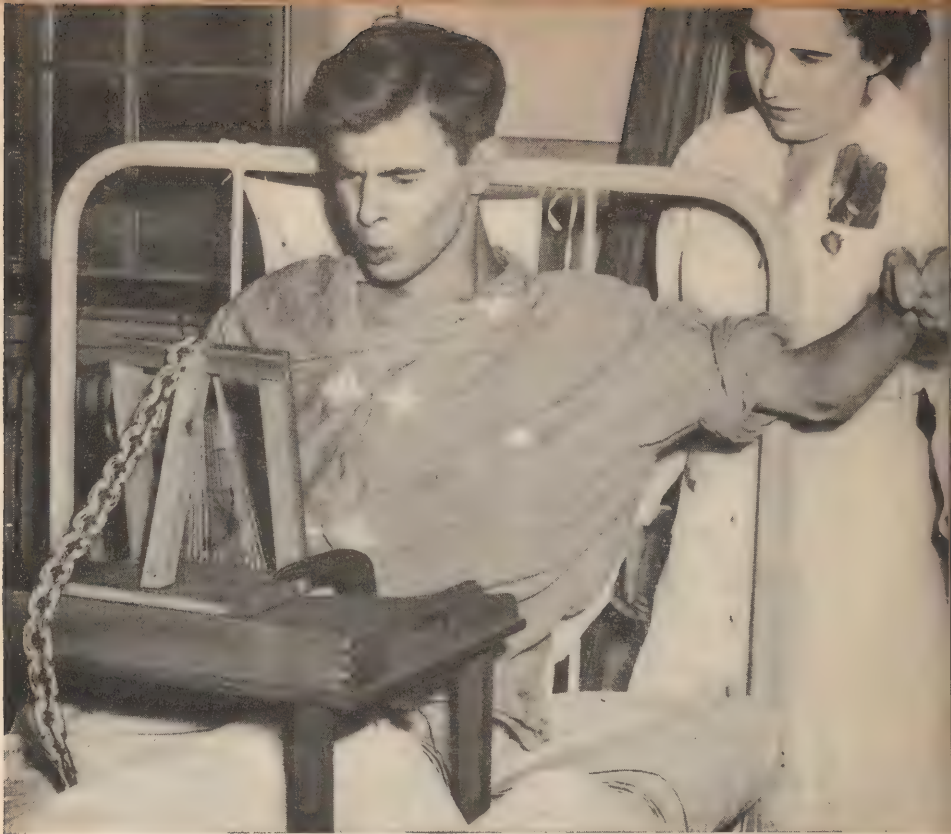


Figure 1. Cord knotting exercises, elbow injured by gunshot wound.

d. Fatigue. Evaluation of the patient's individual fatigue level should be made in terms of repetition of motion, intensity of motion, change of activity and interest. Although the emphasis of functional occupational therapy is predominately on the disability, treatment of the injured part as related to general physical condition must not be overlooked.

17. ADAPTATION OF POSITION AND EQUIPMENT. **a.** In functional occupational therapy, it is important that accuracy of treatment be maintained with reference to—

- (1) Range and direction of motion.
- (2) Degree of physical exertion required.

b. In certain cases of physical disability, it may not be possible to achieve the desired joint or muscle action without adjustment. This adjustment may be achieved through adaptation of—

- (1) Equipment and material.
- (2) Position of work in relation to position of patient.

c. Selected methods of adaptation follow:

- (1) Built-up tool handles.
- (2) Flexion and extension sand-blocks.
- (3) Suspension sling.

- (4) Extension beater on loom.
- (5) Springs for added resistance to bicycle saw, loom, or printing press.
- (6) Special pedal attachments for bicycle saw.
- (7) High, low, or off-center position of work.

d Special equipment should be considered a temporary expedient in grading activity toward the normal use of standard equipment, except in certain cases of permanent disability.

18. JOINT LIMITATION. a. Causes. Joint disabilities are most frequently caused by infections, burns, fractures, sprains, dislocations, arthritis, immobilization in plaster or splints, frost bite, deficiency diseases or from bullets, mortar, grenade and shell fragments.

b. Results. Conditions which may result from these diagnoses are: contracted muscles and tendons, contracted capsules and ligaments, adhesions, scar tissue, swelling, arthritic changes, and loss of joint space.

c. Treatment. The principle of occupational therapy for joint limitation is graded stretching. Joint measurements should be taken at regular intervals so that treatment may be graded with progress as indicated:

- (1) Motion within existing range. (See fig. 1.)
- (2) Motion beyond the existing range. (See fig. 2.)

Figure 2. Patient sanding for elbow extension.



(3) Motion beyond existing range with outside force added, such as weight of tool. (See fig. 3.)

d. Special precautions. (1) Prolonged pain indicates over-activity.

(2) Swelling and inflammation, if undue and persistent, should be reported to the medical officer and, upon his recommendation, activity may be decreased or discontinued.

(3) Loss of joint motion is usually indicative of too little or too much activity and treatment should be adjusted accordingly.

(4) Appropriate choice of activity, or adequate protection where open lesions occur.

19. MUSCLE WEAKNESS. a. Causes. Muscle weakness is usually caused by infections, burns, mortar, bullet, grenade, and shell fragments, arthritis, or prolonged immobilization.

b. Results. Conditions which may result from these diagnoses are:

(1) Central, cerebral, or peripheral nerve involvement.

(2) Atrophy of disuse.

c. Treatment. The principle of occupational therapy for muscle weakness is graded resistance. Muscle testing should be done at intervals and work graded to the present muscle findings. Particular attention must be paid to maintenance of motion and muscle tone in surrounding joints and muscle groups.

Figure 3. Elbow extension beyond existing range with outside force added by weight of plane.





Figure 4. Sling eliminates gravity and patient exercises muscles weakened by immobilization.

- (1) Motion with gravity eliminated. (See fig. 4.)
- (2) Motion against gravity. (See fig. 5.)
- (3) Motion with outside resistance added. (See fig. 6.)

d. Special precautions. (1) Over-stretching.

(2) **Fatigue.** Returning nerve function should be conserved and developed by avoiding work beyond the point of fatigue.

(3) The presence of anesthetic areas will necessitate precautions to prevent damage to skin tissue.

20. INCOORDINATION. a. Causes. Incoordination may be caused by infections, cerebral concussions, hemorrhage, mortar, bullet, grenade and shell fragments, skull or spine fractures, or vertebral dislocations.

b. Results. Conditions which may result from these diagnoses are cerebral and central nervous system lesions.

c. Treatment. The principle of occupational therapy for incoordination is muscle reeducation.

(1) Start muscle reeducation with large muscle groups eliminating the finer movements. (See fig. 7.)

(2) Train in accurate, single joint motion and progress to combined motions. (See fig. 8.)

- (3) Increase speed of performance as accuracy is attained.
- (4) Instruct patient in correct motions to insure carry-over into daily routine.
- d. **Special precautions.** Work with power tools and other potentially dangerous equipment is contraindicated because of impaired balance.

21. THORACIC DISORDERS. a. Causes. Chest disorders are most frequently caused by pneumonia, pneumonitis, bronchiectasis, empyema, lung abscess, tuberculosis, gunshot and shrapnel wounds..

b. Results. Conditions that result from these diagnoses, pertinent to functional occupational therapy, are joint limitation and muscle weakness in the thoracic and shoulder areas, and general body weakness.

Figure 5. Patient with shoulder injury strengthens muscles by working in position against gravity





Figure 6. Added resistance of weight and spring on hand lever printing press exercise shoulder.



Figure 7. Furniture refinishing requires motion of large muscle groups of the arm.



Figure 8. Type setting requires fine coordination..

Figure 9. Fly-tying may be done without involving shoulder motion.





Figure 10. Arm and leg activity through wide range of motion increases respiration.

c. Treatment. The principle of occupational therapy for thoracic disorders is graded activity.

(1) Activity without increase of respiration.

Example: Manual activity that does not involve shoulder motion such as fly-tying. (See fig. 9.)

(2) Activity with increase of respiration.

Example: Arm and leg activity that necessitates wide range of motion, such as the bicycle saw. (See fig. 10.)

(3) Activity to increase muscle power and range of joint motion in secondarily involved areas.

Example: Use of shoulder girdle against resistance, as in gardening. (See fig. 11.)

d. Special precautions. (1) Particular attention should be paid to temperature, fatigue, drainage, and presence of substances irritable to the respiratory tract.

(2) Where joint limitation and muscle weakness occur, precautions as indicated under these headings will apply.

22. CARDIAC DISORDERS. a. Causes. Cardiac disorders are more commonly caused by rheumatic heart disease, bacterial infections of the heart or its coverings, coronary disease, hypertension, syphilis, and thyrotoxicosis.

b. Results. Conditions which may result from these diagnoses are decompensation, general weakness, and reduced capacity of the individual for intensive work activity.

c. Treatment. The principle of occupational therapy for cardiac disorders is graded activity.

(1) Activity in bed involving light finger motions only. (See fig. 12.)

(2) Activity in bed involving forearm and upper arm motions. (See fig. 13.)

(3) Ambulatory activity, preferably off the ward. (See fig. 14.)

d. Special precautions. (1) Controlled activity must be planned to combat the restlessness caused by anxiety and boredom.

(2) Correct posture during activity should be maintained.

23. BLINDNESS. a. Causes. Blindness is usually caused by lacerations, concussions, gunshot and shrapnel wounds, infections, and such diseases as glaucoma and syphilis.

b. Results. The condition which results from blindness is a deprivation of an essential visual means of orientation.

c. Treatment. (1) Activity depending more on touch than on vision and within the patient's existing dexterity.

(2) Encouragement of patient gradually and consistently to extend scope of environment thus developing tactile and kinesthetic sense, and space perception.

(3) Aim toward those activities which demand a high standard of precision in workmanship, such as typing, weaving, and cord knotting.

d. Special precautions. (1) In early stages of blindness, familiarize patient with physical environment and any changes made therein.

(2) Avoid excesses of sympathy.

(3) Avoid doing things for the patient; emphasize independence.



Figure 11. Raking and hoeing provide exercise for secondarily involved areas such as the shoulder girdle.

Figure 12. Light finger activity involved in making of toy animal by Army nurse.



CHART I. OCCUPATIONAL THERAPY ANALYSIS FOR JOINT LIMITATION

(No differentiation has been made between active and passive motion)

Part involved	Prescribed motion	Activity indicated
Thumb and fingers	Flexion	Clay modeling, carpentry with hand tools, radio and electricity construction, fly-tying, type setting, embossograph.
	Extension	Pottery (coil method), furniture refinishing, weaving (braid, inverted), loom weaving (resistance of beater), folding paper stock, piano, typing, gardening (planting, weeding).
	Abduction	Piano, typing, card weaving.
	Adduction	Piano, typing, type setting, radio and electricity construction, leather tooling, embossograph.
	Opposition	Cord knotting, radio repair, type setting, leather tooling, fly-tying, gardening (weeding), leather plaiting, cutting with shears, leather punching, feeding printing press, embossograph.
Wrist	Flexion	Hammering (woodworking, metalry), weaving (roller type), chiseling with mallet, painting large surfaces, leather lacing.
	Extension	Leather lacing, weaving (roller type), hand printing press, cord knotting, gardening (weeding, planting), painting large surfaces, chiseling with mallet, paper cutter.
	Ulnar deviation	Hammering, card weaving, leather tooling, cord knotting, piano, typing.
	Radial deviation	Card weaving, piano, leather tooling.
	Pronation	Leather lacing, spading and shoveling, radio construction and repair, auto mechanics.
Forearm	Supination	Leather lacing, shoveling, radio construction and repair, screw driving, auto mechanics.
	Flexion	Weaving, carpentry (spoke shave, draw knife, drilling) hand printing press, painting, auto mechanics, gardening.
Elbow	Extension	Carpentry (sawing, planing, sanding, filing, hammering, drilling), gardening (planting, hoeing), hand printing press, cord knotting, chiseling with mallet, paper cutter.
	Flexion	Carpentry (planing, sawing, sanding, drilling), auto mechanics, hand printing press, painting, gardening (planting, weeding, shoveling).
Shoulder	Flexion	

Extension	Hand printing press, embossograph, paper cutter, gardening (hoeing, raking), painting and scraping, carpentry (spoke shave, draw knife).
Abduction	Weaving, painting large surfaces, printing, gardening (shoveling, spading, planting, weeding), cord knotting.
Adduction	Printing, carpentry (brace and bit).
Internal rotation	Cord knotting, chiseling with mallet.
External rotation	Cord knotting.
Abduction	Carpentry (planing, sanding), gardening (lawn mowing).
Adduction	Knotting, weaving, carpentry (draw knife, spoke shave).
Flexion	Bike saw, bike sander, gardening (weeding, planting, etc.).
Extension	Bike saw, bike sander, treadle printing press, treadle loom, treadle stapler.
Abduction	Potter's kick wheel, treadle loom.
Adduction	Potter's kick wheel, treadle loom.
Flexion	Treadle printing press, bicycle saw, bicycle sander, gardening (weeding, planting, etc.).
Extension	Bicycle saw, bicycle sander, potter's kick wheel, treadle printing press, treadle stapling machine, gardening (spading).
Flexion	Treadle sander, treadle saw, treadle potter's wheel.
Extension	Treadle sander, treadle saw, treadle potter's wheel.
Flexion	Controlled by position of work
Extension	Controlled by position of work
Lateral flexion	Controlled by position of work Knotting and netting
Flexion	Carpentry controlled by position of work, gardening (planting, weeding, shoveling).
Extension	Gardening, painting, bicycle saw.
Torsion	Gardening (shoveling, weeding, planting), printing.

CHART II. OCCUPATIONAL THERAPY ANALYSIS FOR MUSCLE WEAKNESS

Nerve involved	Muscles involved	Applied work
UPPER EXTREMITY:		
1. Spinal Accessory	Sternocleidomastoid Trapezius	Controlled by position of work.
2. Long Thoracic	Serratus Anterior	Weaving on rug loom. Raking. Sandpapering in antero-posterior plane. Long range planing. Sawing.
3. Thoraco Dorsalis	Latissimus Dorsi	Cord knotting: with long strands. Weaving: use of beater. Carpentry: spoke shave, draw knife. Hand printing press. Paper cutter.
4. Supra Scapular	Supraspinatus Infraspinatus	Cord knotting. Winding warp. Gardening: shoveling, spading.
5. Musculo Cutaneous	Biceps Brachi	Cord knotting. Use of beater: weaving. Gardening: raking, spading. Carpentry: spoke shave, draw knife, sanding, drilling.
6. Axillary	Deltoid	Square knotting. Weaving on large floor loom. Painting large surfaces. Carpentry: planing (anterior deltoid), spoke shave (posterior deltoid), and posterior deltoid).
7. Radial	Triceps Brachio-Radialis Supinator Extensor Communis	Clay modeling on potter's wheel. Painting large surfaces, weaving. Wood carving.

Digitum
Extensor Carpi
Radialis
Abductor Pollicis
Longus
Extensor Pollicis
Longus
Extensor Pollicis
Brevis

Metal tapping, screw driving.

Carpentry: sawing, planing, hammering, drilling.

Gardening: hoeing, spading.

8. Median

Pronator Teres
Flexor Carpi Radialis
Flexor Digitorum
Sublimis
Flexor Longus Pollicis
Abductor Pollicis
Brevis
Opponens Pollicis
Flexor Digitorum
Profundus {Median
 {Ulnar

Leather lacing.

Setting type.

Clay modeling.

Radio construction.

Piano playing.

Typing.

Grasping nails and hammering.

Cutting with tin snips or shears.

9. Ulnar

Flexor Carpi Ulnaris
Abductor Digiti
Quinti
Dorsal and Palmar
Interossei
Adductor Pollicis
Flexor Digitorum
Profundus

Clay modeling.

Setting type.

Typing.

Piano playing.

Weaving.

Carving with built-up tools.

Cutting leather or with tin snips.

Hammering.

Nerve involved	Muscles involved	Applied work
LOWER EXTREMITY:	1. Femoral	Foot power loom. Drill press—foot power. Bicycle saw. Gardening: spading. Kick wheel.
	2. Sciatic	Foot power loom weaving. Bicycle saw. Treadle print press.
	3. Posterior tibial	Bicycle saw—with ball of foot. Lawn mowing. Treadle sewing machine. Treadle lathe, sander, and saw.
	4. Common Peroneal	Treadle saw, sander, sewing machine. Bicycle saw.



Figure 13. Electrical construction involves forearm and upper arm motions.
Figure 14. Ambulatory patients, prescribed to increased activity, potting greenhouse plants.



No concession is made in this chart to

22

position change or equipment adaptation.

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Chart III. (Continued) Occupational therapy analysis

KEY	THUMB AND FINGERS					WRIST				FOREARM		ELBOW	
	Flexion	Extension	Abduction	Adduction	Opposition	Flexion	Extension	Ulnar deviation	Radial deviation	Pronation	Supination	Flexion	Extension
<i>Degree:</i>													
Mild.....													
Moderate.....													
Intense.....													
HAMMERING:													
Tack or ball pein, 7 oz.	xx					xx							x
Standard or planishing, 13 oz.	xxx					xxx							xx
Heavy or machinists, 20 oz.	xxx					xxx							xxx
DRILLING:													
Hand	xx											x	x
Breast	xx											xx	xx
Brace and bit	xx											xx	xx
SCREW DRIVING:													
Common	xxx										xxx		
Ratchet	xxx									x	xxx		
Brace and bit	xx											xx	xx
FINISHING:													
Scraping	xxx											xxx	
Painting, decorative	x												
Painting, furniture	xx					xx	xx					xx	xx
Painting wall and ceiling	xxx					xxx	xxx					xx	xx
Polishing	x	x										xx	xx
CARVING													
LINOLEUM	xx						xx				x		
GAUGING	xx						xx						
CHISEL AND Mallet	xxx					xxx	xx						xx
PRINTING													
TYPE-SETTING	x			x	x							x	x
HAND PRESS:	xxx												
Lever	xxx										x	xxx	xxx
Feeding	x			x	x							x	x

Chart III. (Continued) Occupational therapy analysis

	THUMB AND FINGERS					WRIST				FOREARM		ELBOW	
	Flexion	Extension	Abduction	Adduction	Opposition	Flexion	Extension	Ulnar deviation	Radial deviation	Pronation	Supination	Flexion	Extension
KEY <i>Degree:</i> Mild..... x Moderate..... xx Intense..... xxx													
<i>FOOT PRESS:</i>													
Treadle													
Feeding	x			x	x							x	x
<i>STOCK PREPARATION:</i>													
Cutting	xx						xx						xxx
Folding	xx	xx											
Stapling, hand													xx
Stapling, foot													
EMBOSSOGRAPH													
<i>SETTING TYPE</i>	xx			xx	xx							x	x
<i>PRINTING</i>												xx	xx
BOOKBINDING													
<i>CUTTING:</i>													
Scissors				xxx	xxx								
Knife	xxx											x	
Paper cutter	xx						xx						xxx
<i>PASTING</i>	x												
<i>ASSEMBLING</i>	x											x	x
<i>SEWING</i>				xx	xx								
CLAY													
<i>MODELLING</i>	x												
<i>POTTERY:</i>													
Coil		xx											
Kick wheel													
Treadle													

Chart III. (Continued) Occupational therapy analysis

KEY	THUMB AND FINGERS					WRIST				FOREARM		ELBOW	
	Flexion	Extension	Abduction	Adduction	Opposition	Flexion	Extension	Ulnar deviation	Radial deviation	Pronation	Supination	Flexion	Extension
<i>Degree:</i>													
Mild.....													x
Moderate.....													xx
Intense.....													xxx
LEATHER													
CUTTING	xxx												x
TOOLING				xxx	xxx			xx	xx				
PUNCHING	xxx												
LACING	x					x	x			x	x	x	x
BRAIDING	xx												
KNOTTING	xx				x		xx						xx
FLY TYING	x				x							x	
WEAVING													
CARD	xxx		xx		xx			xx	xx				
FRAME	x					x	x						x
LOOM, TABLE:													
Lever	xx	xxx								x	x	x	
Roller	xx					xx	xx			x	x	x	
LOOM, FLOOR	xx					x				x	x	xx	
GARDENING													
LAWN MOWING													
PLANTING	xx	xx				xx	xx					xx	xxx
WEEDING	xxx	xx				xx	xx					xxx	
HOEING	xxx												xxx
RAKING	xx											xx	
SPADING	xxx									xx	xx		
SHOVELING	xxx									xxx	xxx	xxx	
TYPING	xx	xx	xx	xx				x					
PIANO	xx	xx	xx	xx				xx	x				
RADIO AND ELECTRICITY KITS	xx			xx	xx					xx	xx		
AUTO MECHANICS	xxx									xxx	xxx	xxx	

for comparative intensity of motion.

SHOULDER						HIP				KNEE		ANKLE		NECK			TRUNK			SCAPULA	
Flexion	Extension	Abduction	Adduction	Internal rotation	External rotation	Flexion	Extension	Abduction	Adduction	Flexion	Extension	Flexion	Extension	Flexion	Extension	Lateral flexion	Flexion	Extension	Torsion	Abduction	Adduction
	XX																				
X	X	XX			X																
				X	X																XX
X																					
	X																				
		X																			
		X																			X
																					X
		XX				X	XX	X	X	X	X										XX
																				XXX	
XX	XX					XX	XX			XXX							XX	XX	XX		
XX	XXX					XX	XX			XXX							XX	XX	XX		
XXX		XXX																			
		XX																			
							XX				XX										
																	XX	XX	XX		
XXX																					

CHAPTER 4

TREATMENT OF AMPUTEES

Section I. GENERAL REMARKS

24. GENERAL REMARKS. The amputation case presents a problem and a challenge to occupational therapy, both of which are being met with increasing ingenuity today. Although there is a dearth of research material in this field available as a guide for work with the amputee, the new method of handling these patients in amputation centers and the increased number of cases treated in this war should correct this situation. The surgeon, the limb manufacturer, the limb fitter, the occupational therapist, the physical therapist, and the amputee, are all combining their knowledge, experience and resourcefulness to discover and develop new methods and improve appliances for the amputee.

Section II. PURPOSE OF OCCUPATIONAL THERAPY FOR AMPUTEES

25. PSYCHOLOGICAL PURPOSES OF EARLY TREATMENT. a. The principle of maintaining mental as well as physical health should be applied to amputees during the period of their adjustment to usefulness. A well-healed stump with a correctly fitted prosthesis is of little value to a man whose mind and spirit have been warped by an attitude of cynicism, bitterness, or a feeling of uselessness and inadequacy. Amputations constitute a serious disability. It is therefore, of paramount importance that all possible effort be directed toward a program designed to treat the whole man and not just his physical injury.

b. Immediately following traumatic or surgical amputation, there is a stage of convalescence characterized by a greater or lesser degree of mental shock. During this stage, there is opportunity for early psychological treatment. The patient is aided in his orientation to his disability through an association with those having a similar handicap. Treatment of amputation cases in all stages should be planned in such a way that the new patient, not yet fitted with his prosthesis, mingles with and observes the patient who is just learning as well as the patient already skilled in its use and ready for discharge.

26. TREATMENT IN PRE-PROSTHETIC STAGE. During the early stage following amputation and before a prosthesis has been fitted, referral of arm amputation cases to occupational therapy is very important. Prescription should be for education of the remaining hand, with special emphasis on writing if the dominant hand has been amputated. Writing may be taught for either the remaining hand or the stump as indicated by considerations such as length of stump, and preference of the patient. In addition, various craft and recreational activities will help the recent amputee to develop skill and dexterity in

the use of his hand and to reestablish confidence in his ability despite his handicap.

27. TRAINING IN USE OF A PROSTHESIS. a. After the stump has been healed and hardened, a prosthesis is fitted and the amputee must be trained in its most efficient use. Work should be planned so that learning may come through doing, and that the patient may have every opportunity to find out for himself exactly how and why his prosthetic appliance works and what he may expect of it. Guidance, help, suggestions and a thorough explanation of the mechanics of its operation will all be necessary and helpful to the patient, but it is mainly through his own efforts and determination to learn that real proficiency will develop. Vocational training as such is the responsibility of the Veteran's Administration, but any prevocational training that may be given during hospitalization is, of course, to be desired.

b. The use of a prosthetic achievement chart (fig. 42) will be found helpful in determining the time for discharge. In addition to providing a training ground for the use of the artificial limb, the various occupational therapy activities can act as a proving ground where the prosthesis may be tried out, observed and checked as to function under actual working conditions. Adjustments and changes are thereby facilitated since maximum use will be possible only if individual fittings are correct.

28. CARE OF PROSTHESES. A final but none the less important consideration in the treatment of amputees is thorough instruction in the care of prostheses. The patient leaves the hospital with as nearly a perfect stump and as well fitting a prosthesis as can be obtained. The responsibility for this further care rests entirely with the patient when he has been discharged to civil life. War Department Pamphlet No. 8-7 should be made available to amputees through the Limb Shop. It includes such considerations as cleanliness, care of abrasions and blisters, stump shrinkage, care and maintenance of the moving parts of the artificial limb and the importance of care for the remaining sound limb. A list of Veteran's Facilities where regular check-up, adjustments and repair may be obtained, is appended to the pamphlet.

Section III. TREATMENT IN UPPER EXTREMITY AMPUTATIONS

29. PARTIAL HAND. a. Thumb.

b. **One or more fingers.** In cases where the thumb is lost, or all four fingers, a prosthesis may be supplied to permit opposition and grasp. If the thumb and at least one finger remain, so that grasp is possible, the use of a prosthesis is not usually indicated except for cosmetic effect. In these cases of partial hand amputation, flexibility and strength in what remains are essentials. The patient should work to increase mobility of the intrinsic muscles of his hand, and also to increase the power of his grip. If there is joint stiffness in any of the fingers, treatment should be given for this condition as indicated. Built-up handles for tools, shaped to fit the patient's grasp, and gradually decreased in size as he progresses, are often useful. Clay modeling, leather tooling and lacing, type-setting, and fly-tying are also useful in promoting co-ordination and skill. (See fig. 15.)



Figure 15. Patient with partial hand amputation, shown tying fishing flies for the development of skill and coordination.

30. FOREARM. a. Dominant arm. That arm in which the handedness occurs.

(1) **PRE-PROSTHETIC STAGE.** (a) *Writing.* In the pre-prosthetic stage, the most important consideration for this type of amputation is usually learning to write. Two methods may be used:

1. Writing with the remaining hand.

(a) *Principles of treatment are:*

(1) Large sweeping arm motions and easy rhythm in the formation of fundamental letters, alphabet and figure practice should be emphasized.

(2) Progressive graduation from blackboard to writing table with large sheets of paper, at first ruled and later unruled, and from large sheets to ordinary stationery will be indicated as skill increases. (See fig. 16.)

(3) Constant daily practice is essential to success.

(b) Precautions should be observed as follows:

(1) Practice should be interspersed with other more interesting activities.
(2) Letter-writing should be encouraged to reestablish confidence as well as to increase time spent in practice.

(3) Approved writing positions should be insisted upon at all times.

2. Writing with the stump by the use of an adjustable leather cuff. (See fig. 17.)

(a) *Principles of treatment.*

(1) The cuff is buckled onto the forearm stump and the clip which holds the pencil is turned in such a direction as to give the writer the desired slant and position with relation to the paper.

(2) Writing is done by a rotary motion of the whole arm from the shoulder. (See fig. 18.) In this way, writing becomes a skill of the arm instead of the hand, and since it was by this means—the Palmer method of school days—that many people learned writing originally, return to it is almost more natural than learning anew with the other hand.

(3) When the prosthesis is fitted, the pencil is transferred from the cuff to the new hand or hook and writing is done as previously learned. (See fig. 19.)

Figure 16. Amputation upper one-third right arm. Practice in writing as a part of the education of the left hand.



Figure 17. Writing cuff used by amputees who will be able to write with the prosthesis.

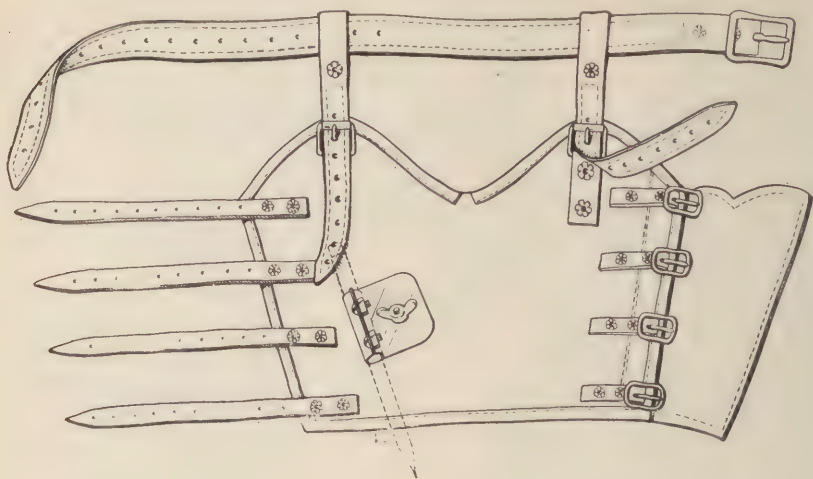


Figure 18. Patient with bilateral arm amputation writing with cuff designed for amputees.





Figure 19. Patient with bilateral arm amputation writing with prosthesis.

(b) Advantages of the cuff.

- (1) The ease and speed of learning.
- (2) Naturalness.
- (3) The factor of encouragement to use of prosthesis when fitted.
- (4) The tendency to keep the patient thinking essentially in terms of being a two-handed person, which will make the next stage easier in many ways.

(c) Disadvantages of this method.

- (1) A necessary delay in starting reeducation because of the precaution against using the cuff on a sensitive stump or because of injuries to the arm other than the amputation.
- (2) In short forearm and upper arm amputation, it is difficult and often inadvisable to use the cuff.
- (3) For disarticulations of the shoulder, this method is impossible.

(b) Other activities. In addition to writing, other activities should be used to develop dexterity and skill in the untrained arm and hand.

1. Ping-pong and darts are excellent for general coordination and skill and have high value from the points of view of recreation and socialization, and



Figure 20. Patient with right arm amputation assembling model for dexterity and skill of left hand.

offer welcome change from writing practice. The competitive nature of these activities is also wholesome, groups of amputees working out similar problems together and having fun in doing so.

2. Type-setting requires finger dexterity and operation of the hand printing press will strengthen unused and undeveloped muscles.

3. Leather work, clay modeling, typing, carpentry, model construction, and similar activities will help teach skill and impart a feeling of self-confidence and accomplishment to the recent amputee. (See fig. 20.)

(2) **TRAINING IN USE OF PROSTHESIS** (a) Approximately 3 to 5 weeks after amputation, a patient will be fitted with his prosthesis, and training in the use of this appliance should start immediately.

(b) *Principles of treatment:*

1. A thorough knowledge and understanding of the mechanics of operation is of prime importance in order that the patient may get the maximum use of his prosthesis. He must know what motions will initiate opening of the hook, and, conversely, how to close it; how to pick up objects near at hand

and those at arm's length, (fig. 21) how to regulate pressure, as for instance on a cigarette or drinking glass, and how to secure maximum holding power.

2. Practice will develop efficiency and ease of use once these principles are understood.

3. Work should be planned in such a way that learning will come through doing, and that the patient may have every opportunity to find out for himself exactly how and why his arm works and what he may expect of it.

4. Special practice in the common procedures met with in daily life should be stressed. Faucets, door knobs, shoe laces, handles, telephones, razors, tooth brushes, eating utensils (fig. 22) and many other simple objects will present real problems on first attempts to use the hook.

5. Ease will replace awkwardness only as the patient pursues daily practice in the use of his appliance and engages in a sufficient variety of activities. Therefore, ingenuity in planning a program to cover every possible use of the prosthesis is of the utmost importance.

6. The use of bilateral crafts and activities should be stressed because they teach a perfect coordination of normal hand and prosthesis. (See fig. 23.) At the same time a patient is learning to use his prosthesis efficiently, he will also increase the skill of his remaining hand to above average level. (See fig. 24.)

Figure 21. Specially constructed checker board and checkers help teach fundamental mechanics of operation of the hook.





Figure 22. The efficient handling of eating utensils is an important consideration for the arm amputee.

b. Secondary arm. The alternate arm from that in which the handedness occurs.

(1) **TREATMENT IN THE PRO-PROSTHETIC STAGE.** In cases of secondary arm amputation, the problem is not so complex. Referral to occupational therapy before the prosthesis is fitted is to be desired but is not as important as with the dominant arm amputations. For purposes of morale, diversion from worry, constructive use of leisure time (fig. 25) and an opportunity for the patient to become acquainted with prosthetics and their use, occupational therapy may prove very beneficial in this stage. Too great independence with one hand should not be stressed because of the tendency not to use the prosthesis when fitted.

(2) **TRAINING IN THE USE OF THE PROSTHESIS.** (a) After a prosthesis has been fitted, the problem is chiefly one of learning to use the new appliance as an efficient helmate to the other hand. Bilateral activities, particularly those requiring skill, are the most important in this type of retraining and should be strongly emphasized because of the tendency to use the good hand to the exclusion of the prosthesis. (See fig. 26.)

(b) Length of stump will largely determine the degree of proficiency with which an amputee will be able to use his prosthesis. The patient with one long forearm stump and free elbow motion is not very much more handicapped than the man with a partial hand, except for his loss of wrist motion. Generally speaking, the shorter the stump, the greater the need for the development of skill in the remaining hand and the greater efficiency required with the prosthesis. Short forearm amputees will have difficulty with, and need more practice in, activities requiring skill because of decreased leverage. These cases will also have difficulty with activities requiring strength since the lifting power will have to come chiefly from the shoulder. Specific treatment will be indicated according to specific conditions and in each case should be planned with the needs of the individual patient always in mind.

Figure 23. Billiards afford an excellent opportunity to learn coordination of normal hand and prosthesis.



31. UPPER ARM. Essentially the same treatment is indicated for all arm amputation cases with variations depending mainly on the handedness of the individual and the length of stump. The loss of an elbow is a serious handicap for although a joint is provided in the prosthesis its motion will usually be controlled by the other hand. Writing with the cuff and prosthesis will be much more difficult, although not impossible except for very short stumps or shoulder disarticulations. Treatment should therefore center on the development of skill in the remaining hand and the use of the prosthesis as a helpmate in holding things. (See fig. 27.) Difficulty will be experienced at first with such things as tying shoe laces, cutting meat and similar two-handed activities. However, the degree of success in the use of an upper arm prosthesis is largely dependent upon the amount of drive and intelligent practice the patient is willing to put into the learning process. Many achievements are possible through continued practice in control of the lead string, elbow and hook in various positions. The upper arm amputee who has initiative and patience, and above all, a desire to learn, can use his prosthesis for a great deal more than merely filling his sleeve. The cosmetic effect is important, particularly for a man whose work brings him into contact with strangers. But the cosmetic effect even for the upper arm amputee is only part of the advantage of the prosthesis.

32. SHOULDER DISARTICULATION. This degree of amputation is fortunately not common. Beyond its value for cosmetic appearance, little can be done with the prosthesis fitted to a shoulder disarticulation. Treatment should stress skill and ability with the remaining hand by participation in as wide a variety of activities as possible.

33. ONE ARM AND PARTIAL HAND. A number of cases of this type of amputation have occurred. Their treatment should be as intensive and complete

Figure 24. In learning to use his prosthesis as the helpmate, the patient will simultaneously increase the skill of his normal hand.





Figure 25. Patient makes a billfold while waiting for his stump to heal and prosthesis to be fitted.

as that indicated for the bilateral amputee. Writing and personal care are among the most important abilities to be mastered at an early stage, and in addition, constant practice in bilateral activities will serve to reestablish confidence and increase independence.

34. BILATERAL. a. Treatment in the pre-prosthetic stage. The first and most important consideration in the treatment of the bilateral arm amputee is the establishment of independence. As soon as the stump is sufficiently healed to permit strapping the cuff to it, treatment should commence.

(1) PRIMARY ACTIVITIES. The cuff will make significant contribution to independence and in addition to its use for writing, adaptations for other activities can be made:

(a) With pencil inverted, eraser end down, pages of a book, paper or magazine can be turned, thus enabling reading for the double amputee.

(b) Equipped with a cuff on each arm, the pencil again inverted, the patient may become quite proficient in the "hunt and poke" system of typing (See fig. 28.)

(c) The adjustable clip will also hold leather tools, paint brushes, and eating utensils, thus opening up other fields of accomplishment.

(2) RECREATIONAL POSSIBILITIES. In addition to these activities, it is also desirable to provide an outlet for energy and recreation.

(a) Leather straps tacked to the handles of ping-pong paddles and then strapped around the stumps have proven almost as adequate as hands in playing ping-pong (See fig. 29.) Two should be used in preference to one because of the opportunity for development of bilateral skill and also to enable the patient to pick up the ball and serve it himself.

Figure 26. Patient uses hook as helpmate to other hand.





Figure 27. With elbow joint locked in position of flexion, upper arm amputee can hold objects in position for work with normal hand.

(b) Larger clips on the cuff to accommodate a cue handle will permit the addition of billiards as an activity for recreation and training in skill.

(3) These activities will also do much toward maintaining general bodily health, circulation, and muscle tone which are often sluggish because of the very slight use of the arms after amputation and before the fitting of prostheses.

b. Training in use of prostheses. When the patient is fitted with his prostheses, there are certain things, such as typing (fig. 30) that he now finds quite simple to do. Having already learned how to get along without fingers, and with the hooks as a far more adequate means of holding utensils, skill in their use develops rapidly.

(1) **PRINCIPLES OF TREATMENT.** (a) Ample opportunity should be given each patient to practice with eating utensils (fig. 31), dressing, shaving, and such common accoutrements of living as faucets, door knobs, keys, coins,



Figure 28. Equipped with a cuff on each arm, the bilateral arm amputee is able to type.

Figure 29. Ping-pong paddles may be used before prosthesis is fitted.



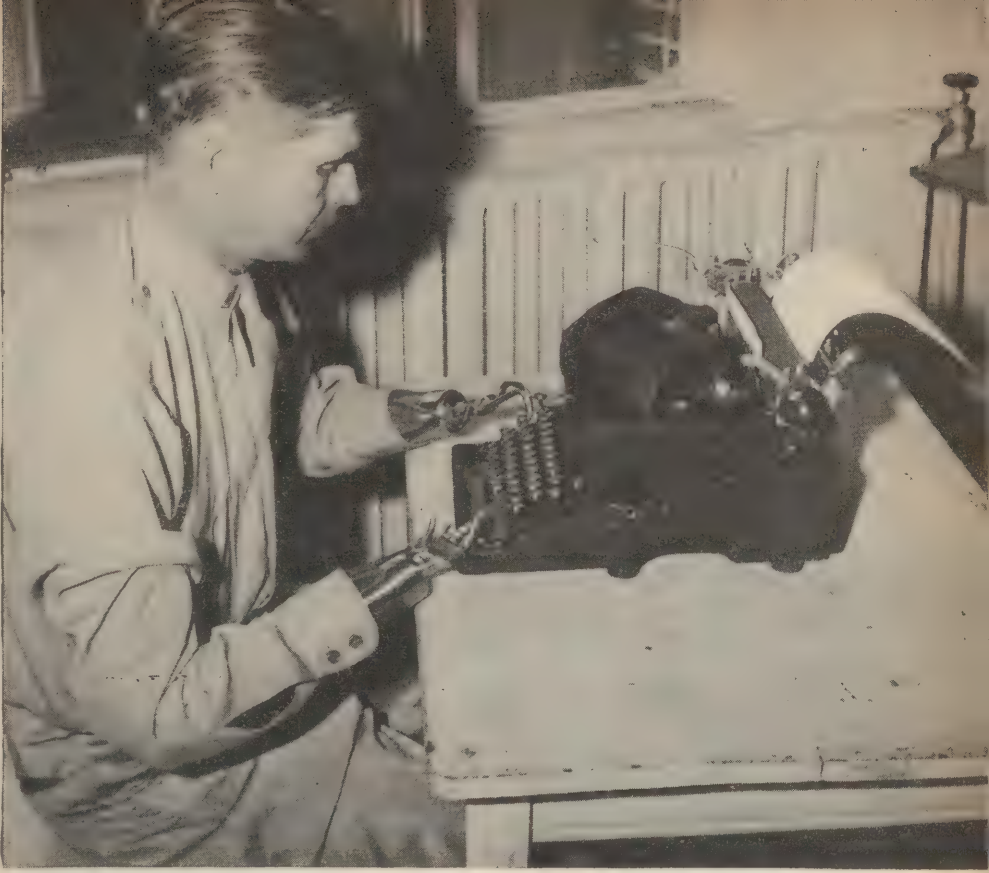


Figure 30. Typing may be easily and quickly learned with bilateral prostheses.

and papers. Most of these skills and abilities will be developed and perfected only through diligent application in constant practice.

(b) A varied program of activity should be planned to insure change from practice with skills before a patient encounters discouragement through repeated trial and failure.

(c) Ping-pong (fig. 32) and billiards will be helpful in teaching coordination and timing with relation to the interdependent function of the hooks, and are good socialization and recreation media. Other activities may be used as indicated by a patient's willingness and desire to learn. (See fig. 33.)

(2) PRECAUTIONS. (a) It has been found that the bilateral amputee can do many of the things that two-handed people can do, but he must be allowed to do it in his own way.

(b) Angle of hook, direction of approach, control from the shoulder and back muscles are significant considerations and must be mastered by these patients before skill can be developed.

(c) Special equipment and apparatus should be avoided since the main objective in treatment is to foster morale and independence in every day living.

35. BILATERAL WITH ADDITIONAL LOSS OR HANDICAP. The condition of bilateral arm amputation may occasionally be accompanied by further disability such as partial or total loss of sight.

a. Writing with the cuff may be facilitated by outlining the paper with raised margins against which the pencil will be guided.

b. Muscle retraining and development of coordination and skill should be emphasized.

c. Training of these cases will necessarily be very specialized, depending on the individual factors involved and results will depend largely on the attitude and perseverance of the patient.

Figure 31. Daily practice with eating utensils will lend confidence and self-assurance as well as develop skill in use.





Figure 32. Ping-pong teaches coordination and timing with relation to the interdependent function of the hands.



Figure 33. Patient with bilateral forearm amputation increases skill with prostheses while printing pictures.



Figure 34. The floor loom helps teach coordination and placement in early training in use of lower extremity prosthesis.

Section IV. TREATMENT IN LOWER EXTREMITY AMPUTATIONS

36. PRE-PROSTHETIC STAGE. Leg amputation cases are often confined to bed by traction for long periods of time following surgery and before treatment is begun to prepare the stump for a prosthesis. During this time, a planned program of diversion designed to decrease preoccupation with symptoms and general boredom from inactivity will contribute to the patient's mental well-being and consequent adjustment to his handicap. These cases, although they do not come under the classification of functional work, are nevertheless

worthy of consideration and should be given as much time as is in keeping with the over-all program.

37. TRAINING IN USE OF PROSTHESIS. In the Army, the training of leg amputees is handled by the physical therapy department which teaches the fundamentals of correct use. Occupational therapy therefore will be called upon only to supplement their activities. It is important that the occupational therapist be familiar with the techniques of gait and balance taught in physical therapy so that she may employ the same techniques when the patient is engaged in activities under her supervision. Principles of treatment should be based on the following general procedures:

a. Soon after the fitting of a prosthesis, and before extensive weight-bearing is attempted, the floor loom will help teach coordination and placement (See fig. 34.)

b. The bicycle jig-saw (fig. 35) and treadle printing press (fig. 36) will

Figure 35. The bicycle jig-saw provides exercise for long unused muscles without the strain of body weight.



A.M.L.



Figure 36. The treadle printing press is a step beyond the jig-saw in strength and coordination requirements.

Figure 37. Patient with lower leg amputation engages in recreational activities for further skill with prosthesis.



strengthen long-unused muscles without undue strain on the stump from the pressure of body weight.

c. For establishing balance and a sense of security, shuffle-board, archery, horseshoes, and billiards are best in the early stages, with badminton, bowling (fig. 37), gardening (fig. 38) and similar activities being added as weight tolerance and proficiency are increased.

d. Swimming is valuable for general muscle tone unless contraindicated.

e. Dancing will aid in the development of coordination and rhythm.

f. Driving a car should be used as indicated by the facilities of the hospital (See fig. 39.)

g. Other activities may be used as indicated by the facilities of the hospital (See fig. 40.)



Figure 38. Patient spading in hospital garden increases weight tolerance and skill in use of prosthesis.



Figure 39. Other amputation cases go along for the ride as the driver tries out his new leg.

Figure 40. Arm and leg amputation patients on horseback.



PROSTHETIC ACHIEVEMENT CHART

Upper Extremity

Name _____ Grade _____ Ward _____

Site of amputation _____

Single _____ Left _____ Date first visit _____

Double _____ Right _____ Date Prosthesis received _____

Any other physical disability _____ Date discharged from O. T. _____

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Pingpong with cuff 2. Writing and typing with cuff 3. Writing with left hand 4. Writing with prosthesis 5. Pingpong with prosthesis 6. Typing with prosthesis 7. Dial and answer phone and messages 8. Fold business letter and put in envelope 9. Open sealed envelope and take letter out 10. Operate pencil sharpener 11. Open and close windows and drawers 12. Open door with double lock 13. Use knife and fork | <ol style="list-style-type: none"> 14. Pick up cups and glasses 15. Tie shoe laces 16. Tie necktie 17. Comb hair and shave 18. Button buttons 19. Light cigarette safely with match or lighter 20. Turn types of light switches on and off 21. Turn faucets on and off 22. Leather project 23. Woodwork project 24. Project in weaving or cord knotting 25. Play checkers 26. Throw darts or horseshoes 27. Additional skills |
|--|---|

Figure 42. Suggested activities for consideration in the prosthetic achievement chart for upper extremity.

39. APPLICATION. In order to provide objective measurement for the demonstrated satisfactory ability to use his prosthesis, the prosthetic achievement chart (fig. 41) has been advised. The form for this chart will necessarily be determined by the type of prosthesis being tested and the type of equipment available. Essentials to be included for the arm amputee are the common skills such as eating, dressing, and writing, which every amputee must master before discharge. (See fig. 42.) A similar form, with activities suited to test proficiency of use for lower extremity amputee may be used. Ratings of accomplishment will naturally depend largely on the site of amputation and therefore the maximum proficiency possible for a given condition. Use of this type of chart will prove of real benefit in determining when an amputee is ready for discharge.

CHAPTER 5

OCCUPATIONAL THERAPY IN NEUROPSYCHIATRIC DISORDERS

Section I. OVERVIEW

40. OVERVIEW OF PROBLEM. Nearly everyone recognizes that even the most distressing situations in life are easier to face if one has a job to do that seems important.¹ Work, play, or relaxation and rest must find a part in the activity of everyone each day in the interest of mental health. Work has long been recognized as a useful means of diverting the mind from its troubles and anxieties. Occupational therapy employs this age-old concept in the treatment of nervous and mental disorders. "We find almost regularly in psychiatric patients that they cannot work, they cannot play, and they cannot rest. They have to be taught to do all three of these things. Fortunately, in most cases it proves possible to grade assignments so that the patient may be taught to play and taught to work and thus taught to divert available energy toward the construction of patterns of creativeness."²

41. PURPOSE. Occupational therapy is of increased importance in the treatment of neuropsychiatric disorders because it is practical, promotes a desire to want to get well, and assists in socialization. It is also an effective aid in restoring self-confidence and a sense of security. Absorption in interesting, useful tasks, or in hobby interests, denied expression during the war, are a means of putting in order disorganized thoughts. Occupational therapy substitutes constructive habits and outlets for tensions and may facilitate sublimation.

42. ADMINISTRATION. Participation in occupational therapy will be required, if the psychiatrist so directs, with freedom given the neuropsychiatric patient in the choice of purposeful tasks he would select by his own will.

a. Division according to types of cases. Psychiatric patients attending the occupational therapy department will be organized into social groups in similar stages of recovery. The patient who is very sick needs to be separated from the slightly ill. It will be found that closed ward patients should have their own shop or shop period. Some open ward patients also still require individual handling. The majority of open ward nervous and mental cases may, however, be intermingled to advantage with other patient groups. This avoids the hazards of belief that they are different from others as well as exaggeration of stigmatization.

b. Division according to types of activities. If all crafts are taught in one room, it is often noisy and confusing. A solution to the problem of different

¹Barton, W. E., M.C., "Occupational Therapy;" *Manual of Military Neuropsychiatry*, edited by Harry C. Solomon; W. B. Saunders Co., pp 604-610, 1944.

²Menninger, Karl, "The Abuse of Rest in Psychiatry," *J.A.M.A.*, 125:1080-1090, 19 August 1944.

patient needs is in the establishment of two sections of the shop. One shop room features the noisier, more robust projects such as carpentry, metal work, and graphic arts. In it useful articles are made for the hospital, such as file boxes, bookcases, cabinets, ash trays, medicine trays, or printed letterheads or a newspaper. The other shop is a quiet restful place—even the color motif differs from the active shop—where creative arts and crafts are featured. Efficient shop practice calls for a carefully planned detailed schedule. Work standards should be high in order to approximate normal work situations.

c. A greater variety of occupational activities should be provided for neuro-psychiatric cases in order to meet the varied interests of patients. In addition to the usual arts and crafts, the following will indicate the range: wood working, graphic arts, radio and electricity, motor mechanics, photography, gardening, model plane building, and industrial (work) assignments about the hospital or camp. Even such hobbies as collecting stamps or nature study materials have a place in occupational therapy in selected cases for they may arouse the patient's interest. Recently, small manufacturing assembly processes have been successfully introduced into the hospital ward occupational program.

43. PRESCRIPTION. The psychiatrist must accept the responsibility for indicating when the patient is ready for occupational therapy and must indicate the desired objectives. The more complete the understanding of the individual patient's problems and psychological needs, the more skillfully may occupational therapy be prescribed. The therapist, if acquainted with the essential facts and precautions in the case will then be able to more intelligently treat these special types of patients through the selection of particular activities designed to meet a particular problem. No patient should be accepted without a prescription by the medical officer. Observation made by therapists on the behavior and attitudes of patients in the informal atmosphere of the shop have value to the psychiatrist in the management of the patient and should therefore be transmitted to him at regular intervals.

44. TECHNIQUE OF APPLICATION OF OCCUPATIONAL THERAPY.

a. The vast majority of neuropsychiatric cases encountered in military hospitals are psychoneuroses. Most of the cases occurring in combat and being returned from overseas represent the psychoneuroses. Most frequent type by far are the anxiety states, followed by the gastro-intestinal and cardiac neuroses, hypochondriasis, neurasthenia, and conversion hysteria. The situational stress of battle has been found more important than personality weakness in a large proportion of the combat cases. It is the threat of danger in return to duty that makes it necessary for the combat soldier to cling to his neurosis, or the return to the overwhelming situation again that makes the neurotic continue ill.

b. Essential factors in therapy are immediate treatment while symptoms are amorphous and avoidance of prolonged hospitalization which tends to aggravate the symptoms through exaggeration of the concept of illness. As soon as the necessary investigative procedures have been completed, therefore, all patients who do not require closed ward care with intensive individual therapy are assigned to convalescent facilities or convalescent hospitals or to the advanced reconditioning section where they are housed apart from hospital wards. Here they are exposed to an active program of physical and educational reconditioning and occupational therapy. The expectancy of recovery must permeate the atmosphere. Greater benefits will accrue if the patient is aware

that the planned reconditioning program, which includes occupational therapy, is the prescribed treatment for his disorder and that he has a share in the responsibility for getting well. Patients must also be impressed with their continuing responsibility to the group. Even though incapable of combat, they must still perform service consistent with their abilities. A strong program of motivation is an essential part of the therapy.

Section II. PSYCHONEUROSES

45. TECHNIQUE OF APPLICATION OF OCCUPATIONAL THERAPY IN PSYCHONEUROSES.

a. About 2 hours daily should be planned as a minimum of time to be devoted to occupational therapy. All of the various types of occupational activities apply in the psychoneuroses. The choice of the type of work project for a particular patient should be determined by an understanding of the dynamics of the illness which the ward officer will interpret to the therapist. The work selected should meet a specific psychological need. An example might be cited to illustrate the use of occupational therapy based upon an understanding of a patient problem. Sgt. E. M., an instrument maker in civilian life, was left with severe anxiety after recovery from an attack of arthritis. His fears were linked with the invalidism and complete economic dependency suffered by his father after an attack of arthritis that crippled the father's hands. Sgt. E. M. regained his confidence in himself and demonstrated to his satisfaction that he could still perform fine skillful movements in an occupational therapy project in which he made a minute casting of a sculptured crucifix and a tiny model house which he designed and constructed.

b. Correlation of occupational therapy with study interests in the educational reconditioning program offers much advantage. Such projects as electrical, radio work, wood and metal work, printing, motor repair and maintenance, and business administration, will fit a patient for further military service or will prepare the way for his return to civilian life. Grouping patients with similar interests in a class such as motor mechanics may serve as purposeful occupational therapy and as a form of psychotherapy. The problem-solving attitude necessary to the acquisition of new skills may be turned to develop group interaction when the opportunity affords. Similar projects can be organized with electrical equipment, gardening, landscaping, carpentry, photography, and hobby interests. Selective industrial (work) assignments around the hospital or post also are of great value in the treatment of the psychoneurotic patient. He gains security in a job situation which provides recognition and which was previously denied in a misassignment.

c. Hysterical paralysis. (1) **CAUSE.** The cause of hysterical paralysis is difficult to elicit and may often be obscure. The functional approach, as outlined below, is one of the methods of treatment.

(2) **RESULTS.** The condition resulting from this diagnosis is an impairment of function manifested by joint limitation and muscle weakness. Restoration of function occurs only when the original cause is ameliorated or removed.

(3) **TREATMENT.** The principle of occupational therapy for hysterical paralysis is a correlation of the psychiatric and functional approach.

(a) Recognition of the disability from a functional point of view, applying activity within the limitation.

(b) Raising of the achievement level in correlation with psychiatric treatment or progress.

(c) Encouragement of extensive use of the affected part through graded exercise for joint limitation and muscle weakness.

(4) SPECIAL PRECAUTIONS. The same precautions which apply to the treatment of joint limitation and muscle weakness will pertain.

Section III. PSYCHOSES

46. TECHNIQUE OF APPLICATION OF OCCUPATIONAL THERAPY IN PSYCHOSES.¹ a. The *depressed* patient is overwhelmed by a sense of personal failure and ideas of guilt. Retardation in thought and activity are frequent symptoms as are easy frustrations and a low level of work tolerance. One must reestablish feelings of personal value and of achievement and stimulate interests outside the patient, or provide, at times, a means of expiation of guilt. Previous hobbies and work interests of the patient must be explored and work prepared in small units that can easily be achieved within the allotted time. If simple tasks are chosen at the start, there is less chance for bewilderment or lack of concentration and interest. Arts and crafts usually are most acceptable, but industrial (work) therapy is also helpful. Occasionally menial tasks may assist the individual in punishing himself and in atoning for his "sinful" ideas. The need for an ever constant guard against suicide when working with depressed patients is mandatory.

b. *Excited* patients are aided in clinging to rational behavior through an opportunity to discharge tension in work. Patients with extreme over activity seldom work well within the close confinement of the occupational therapy shop. Frictions and irritations inevitably result from too intimate contacts with other patients. Industrial (work) therapy is usually the best for this group. Work that requires fatiguing vigorous bodily action is desirable in a place that provides enough room to move about freely without coming closely in contact with others. Gardening, outdoor labor, "rough" salvage, and construction are jobs suited to the needs of excited patients.

c. *Schizophrenic* patients suffer from a loss of interest and initiative. They lack the capacity for forming attachments with others and are beset with notions of inferiority and insecurity. Living as they do in a dream world, it is often difficult to penetrate through their wall of fantasy. The therapist must know how to captivate the interest of such an individual. The abrupt onset and the importance of situational factors in military cases of schizophrenia or dementia praecox combine to effect a more favorable prognosis. Stimulating group activities, with an opportunity for socialization and with some work pressure forcing group interaction are sometimes most helpful. The organized activities of patients engaged in printing a news sheet in the shop is an example of group work. Typesetting, press operation, cutting and folding demand cooperation if the task is to be smoothly done. Industrial (work) therapy also offers many opportunities. Gardening is one of the best of such means. Many will find ego satisfaction in creative art and the first signs of renewed interest in the world of reality may come through painting or music.

d. The *Paranoid* individual, who is suspicious and distrustful, often responds best if given an individual work assignment of trust. The assigned task must

¹Barton, W. E., *op. cit.*

satisfy the cravings for self-importance. They work best alone. Satisfactory examples are: work in the finance office, medical supply offices or warehouses, in the library, or as an operator of the hospital public address system. Individual job assignments or hobby interests or art projects that are established should encourage a standard of excellence that may recreate a true sense of self-importance.

Section IV. OTHER NEUROPSYCHIATRIC CONDITIONS

47. TECHNIQUE OF OCCUPATIONAL THERAPY IN OTHER PSYCHIATRIC DISORDERS.¹ *a. Psychopathic personalities* adjust poorly to the regimentation and team play required in the Army. They seek to avoid group responsibility and constitute behavior problems. In occupational therapy they require impartial military discipline, that minimizes the opportunity for seeking self gain. Any project to which they are assigned demands a close supervision. Interests and aptitudes, if carefully explored, may reveal a basis upon which to build. The psychopathic patient usually adjusts readily in the occupational therapy shop. Suggested activities in occupational therapy are carpentry, radio, electricity, automotive mechanics, printing and graphic arts.

b. Mental defectives must be assigned tasks commensurate with their ability to accomplish and complete them. They must have assurance that they, too, are valuable members of the military group. A short time project with an immediately perceivable result serves the purpose best. Liberal praise, consistent with achievement, may restore to society by this means a useful but limited member. Suggested activities in occupational therapy are leather work, plastic crafts, metal work, weaving, and simple carpentry.

c. Psychosomatic disorders are prevalent in military medical practice. Studies have shown that in military hospitals, on medical and surgical wards, as many as one-third of the patients may have severe and unrecognized psychosomatic concomitants to their physical disability. Powerful unconscious factors operate as a result of exposure to death or the rigors of military service that tend to prolong disability and extend symptoms from somatic illnesses. For example, it is important to take the mind of a patient suffering with back pain or headache from over-concern with his complaint and to motivate the person toward normal interests and recovery. A person with a stiff knee, although surgically recovered, may continue to be disabled. Occupational therapy, while primarily diversional in its application to general somatic problems, may perform a service in removal of psychic barriers to recovery. The general techniques stated in chapter 2 on functional occupational therapy will apply as will diversional activities in many instances.

d. Neurological problems most prevalent in military hospitals are:

- (1) Post-traumatic conditions, either central, spinal, or peripheral.
- (2) The complications of infections of the nervous system, such as polyneuritis, encephalitis, or meningitis.

(3) **THE CONVULSIVE DISORDERS.** The occupational treatment of convulsive disorders offers no particular problem. The only care necessary is the avoidance of hazardous occupations that might cause personal injury. Post-traumatic disorders may involve the personality and so necessitate individual-

¹Barton, *op. cit.*

ized approaches. They often involve motor areas. Regeneration of nerves is a slow process. Occupational therapy helps relieve the mental factors that serve as inhibitors to the return of function. Patient guidance in the performance of handicrafts may improve motor coordination. Even severe handicaps, such as paraplegia, will be benefited by graduated occupational therapy and will aid in restoration of greater activity. It is helpful to restore their confidence in their ability to perform useful work. See chart 2 for suggestions of activities applicable to nerve injuries.

48. PRECAUTIONS. Several enlisted men assigned to the shop may insure security in the handling of neuropsychiatric patients as well as assisting with teaching and cleaning. When closed ward patients are brought to the shop there must be a strict observance of certain protective measures. Patients must be brought to and from the ward safely. The occupational therapy shop door should be locked during the work period. Constant, unobtrusive supervision must be provided at all times. Tools will be kept in locked shadow-board cabinets that reveal missing articles at a glance. Before any patients are permitted to leave the shop, all tools must be returned and checked. Depressed patients require constant surveillance. Tools, potentially dangerous, may be used only if personal supervision is constant during the period of use.

CHAPTER 6

DIVERSIONAL HANDICRAFT ACTIVITIES

49. DEFINITION AND PURPOSE. Diversional activities comprise those recreational interests such as arts and crafts, music, dramatics, games, special interest projects, and hobbies which are applied for their mental and social values. They serve chiefly to divert the mind from thoughts of illness and invalidism, and they constructively utilize leisure time. The learning and acquisition of new skills stimulates the interest and sustains morale. Participation in group activities encourages socialization. The use of diversional activities on the ward aids administration of medical care and furnishes the opportunity for self expression, thereby maintaining initiative and conserving good work habits.

50. ORGANIZATION AND ADMINISTRATION. All art and recreation will be under medical supervision and coordinated by the chief reconditioning officer. Art and handicraft activities will be arranged and supervised by the Occupational Therapy Department whether prescribed or offered as a diversion. In those hospitals which do not have an occupational therapy department, the Red Cross will be responsible for conducting the art, craft, and hobby activities as one phase of its hospital program of social service.

51. COORDINATION OF RED CROSS ACTIVITIES WITH OCCUPATIONAL THERAPY. The Red Cross upon request will recruit volunteer assistants to work in the occupational therapy department.

a. The Red Cross hospital executive will maintain administrative responsibility for all volunteers including recruitment and the keeping of records.

b. "Gray Ladies" procured and trained by the Red Cross may be assigned to the Occupational Therapy Department as one of their services. Additional training in the craft activities may be given to this group by the Occupational Therapy Department. With such training these workers become valuable assistants under the technical direction of the therapist.

c. The volunteers of the Arts and Skills Corps are assigned as a group to the Occupational Therapy Department. Hospitals located near large centers of population will have the advantage of this service. Skilled artists and craftsmen are available in these localities and may be secured to instruct the patients referred for diversional activities. They will render valuable expert instruction and assistance. Such a plan makes it possible to reach large groups of patients that otherwise might not have the opportunity for participation in the Occupational Therapy program due to the scarcity of professional personnel. These instructors may work directly on the wards or in a studio shop, teaching large groups of patients with special interests or creative talents.

d. Close cooperation with the Red Cross hospital executive is important to the occupational therapy program. The social worker and recreational worker are in frequent contact with many patients and will transmit the expressed desires concerning arts and crafts to the occupational therapist.



Figure 43. Patient painting in hobby shop.

Figure 44. Patient modeling with clay in diversional shop.





Figure 45. Patient assembling model boat.

52. TYPES OF ACTIVITIES. All of the arts and crafts provide satisfactory diversional therapy. Therefore all allied handicrafts, painting (fig. 43), cartooning, light metalry, clay modeling (fig. 44), wood carving, and model construction (fig. 45) are popular. Photography with developing and printing of pictures interests many patients. Music offers an excellent outlet for repressed energies through choral singing, playing of instruments (fig. 46) and orchestral or bandwork. Dramatics afford opportunity for leadership, ingenuity, and objective work activity.

53. PRECAUTIONS. General precautions should be observed as follows:

a. Maintain good posture and working positions for ambulatory patients. Work benches and chairs or stools should be of correct working height.

b. Maintain good posture with bed patients providing proper support for back, arms or legs where necessary.

c. Provide good lighting.

d. Avoid any adjustment of casts, braces, traction weights, or other orthopedic apparatus.



Figure 46. Ocarina class of ambulatory patients on the ward.

Figure 47. Bed patient making wall plaque with wood-burning tool.





Figure 48. Knotting belt with multi-colored strings.

e. Avoid materials that may aggravate the patient's condition, that is plastic surgery cases should work with clay or some such nonirritating medium rather than wood or metal.

f. Care should be exercised to plan projects for the patients that are sufficiently simple to make (fig. 47), highly colorful (fig. 48), and purposeful (fig. 49).

g. Analysis of activities should be made to insure the use of the diversional occupations which are within the capabilities of the patient and those in which he will take an active interest.

h. Avoid assignment of volunteer workers to wards in which there is any element of danger.

i. Maintain interest in service in order that instruction may be enthusiastic and continuous.

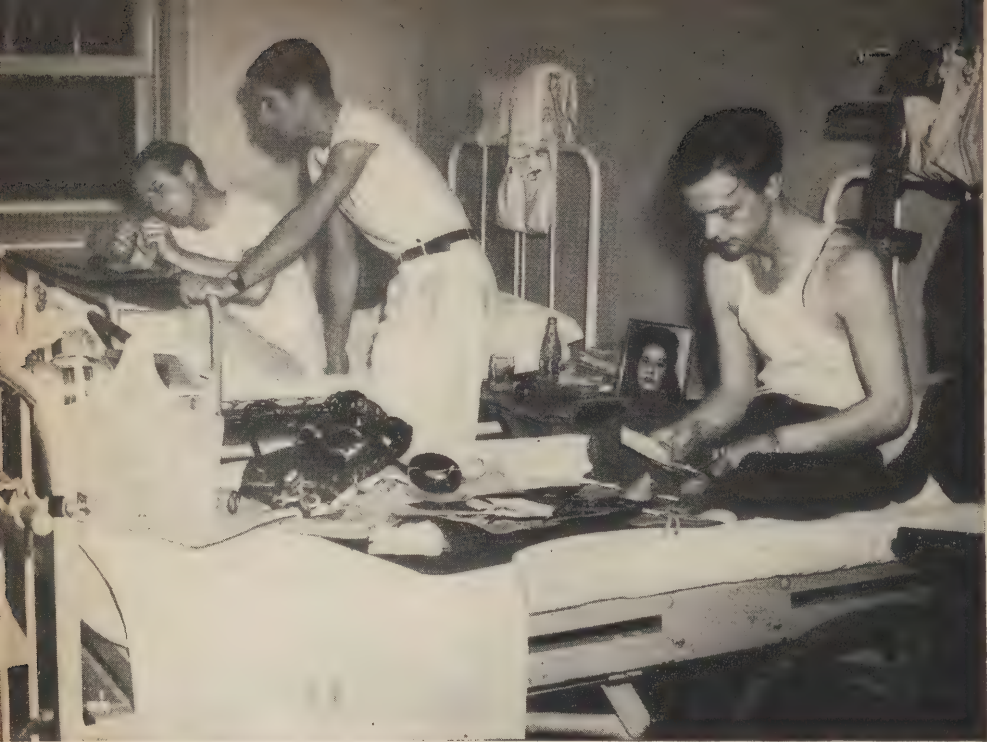


Figure 49. Leather work is a purposeful, leisure time activity.

54. SUGGESTED WARD ACTIVITIES. A list of suggested art and craft activities, suitable for use on the ward, is appended by chart IV.

CHART IV. SUGGESTED WARD ACTIVITIES

Individual work:

- All types of leather work
- Gimp belt and bracelets
- Knotted belts and purses
- Airplane models
- Jeep models
- Tank models
- Ship models
- Chip carving
- Inlaying wood work
- Plastic work—bracelets, boxes, etc.
- Sketching and painting
- Modeling clay
- Block printing
- Stenciling
- Weaving—small looms
- Weaving—card

Group Work:

- Folding bulletins
- Folding hospital newspaper
- Bandage making

Kits:

- Radio—assembly and repair
- Electric construction
- Mineralogy—types and geography of rocks
- Clocks and watches—assembly and repair
- Field telephone—dismantling and reassembling
- Pinhole cameras—construction and use
- Electric motors—assembly and learning parts
- Carburetors—assembly and learning parts
- Generators—assembly and learning parts
- Chemical sets
- Chemical gardening sets

55. RED CROSS RECREATION PROGRAM. The Red Cross recreation program in the Army hospitals embraces such activities as social recreation, music, special interest projects, games and entertainment.

CHAPTER 7

INDUSTRIAL THERAPY

56. DEFINITION. Industrial Therapy is the use of an industrial assignment or work project for its therapeutic effect.

57. PURPOSE. When used as part of the Reconditioning Program, it is applied to medical, surgical or neuropsychiatric patients for their physical or mental needs. Under medical supervision, industrial resources of a hospital are utilized for the following treatment purposes:

- a. General effect on muscle tone.
- b. Specific effect on injuries.
- c. Combat the effects of prolonged hospitalization.
- d. Increase work tolerance.
- e. Reestablish work habits and allay periods of mental and physical idleness.
- f. Stimulate mental alertness.

58. SCOPE. Many opportunities exist for the employment of convalescent patients in hospital maintenance and management, such as the utility shops (figs. 50 and 51), motor pool, warehouses (fig. 52), laboratories, supply, offices (fig. 53), landscaping and gardening (fig. 54). As the patient progresses through the stages of convalescence, he experiences a corresponding increase in energy. Energy can be more effectively used and absorbed by such activities as building trades (fig. 55), use of power tools (fig. 56), drafting (fig. 57), and clerical assignments (fig. 58) having more of an industrial nature than the less active arts and crafts. A man given an opportunity to contribute to the maintenance of his own community takes the first step toward the resumption of normal life.

59. PRECAUTIONS. a. Proper placement in job assignments must be beneficial to the patient in order to maintain the therapeutic value. "Industrial Therapy is viewed with approval as long as the assignment of each individual to a project is made only with a clearly defined purpose. The relationship of the work to be done to the recovery of the patient should be clear to him. Above all, work projects should not be allowed to deteriorate into a source of cheap labor."¹

b. Patients on job assignments should be readily accessible to ward officers at all times. Clinical appointments and consultations take precedence over industrial assignments.

60. CORRELATION WITH RECONDITIONING PROGRAM. a. All classes of patients in the Reconditioning Program are eligible for industrial therapy.

¹Reconditioning Conference, Hammond General Hospital, Modesto, Calif., 16 June 1944, Brig. Gen. C. C. Hillman.

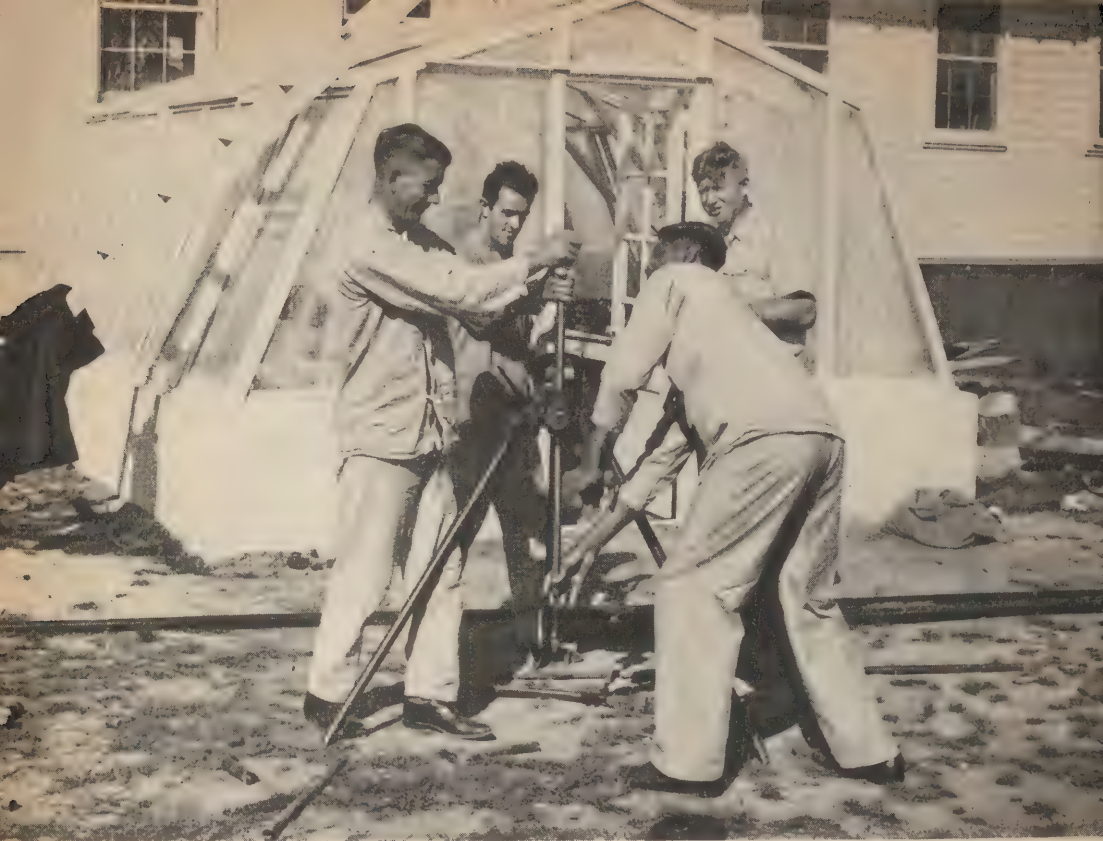


Figure 50. Reconditioning patients with plumbing experience work in the plumbing shop and around the hospital.

Figure 51. Patients assigned to utility shops.



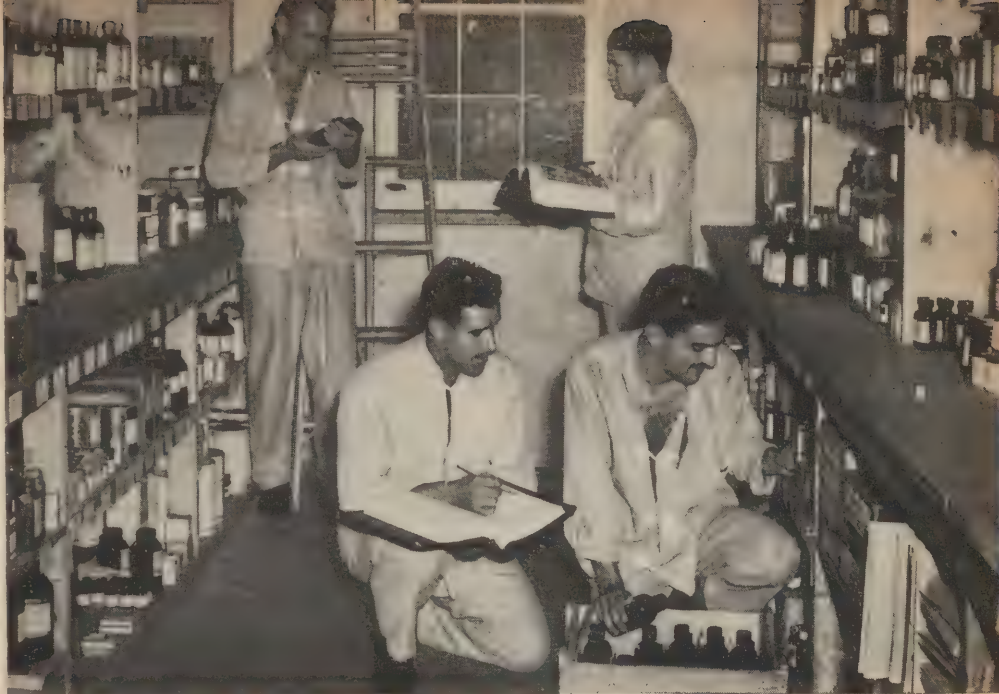


Figure 52. Patients working in the medical supply warehouse.

Figure 53. Sorting mail in the hospital post office.



Those patients of classes 3 and 4 who are prescribed to activity for functional or neuropsychiatric treatment, will be under direct supervision of the occupational therapist. Industrial therapy meets the work needs of that large group of patients who have progressed beyond the need for specific therapy. In this instance a patient may be prescribed for an extension of treatment. In cases where the patient is in the acute stage of functional treatment, he may be assigned to a job that does not involve the injured part. All other patients are assigned as a general toughening process.

b. The Educational and Physical Reconditioning sections apply similar and additional activities for the further treatment of patients in classes 1 and 2. (See TM 8-290 and 8-292.)

c. The supervisor of the industrial therapy program, who may be a medical officer of the reconditioning service, is responsible for checking the patient's physical condition with the demands of a job assignment, determining the time of day the patient works, the length of working time, and the reassignment of patients on change in classification.

Figure 54. The Victory garden, a popular assignment.





Figure 55: Patients working in the reconditioning shop.

61. JOB PLACEMENT. a. The reconditioning officer places a patient in industrial (work) therapy on a request from the ward officer. This request should contain a statement of the patient's physical and mental needs. The occupational therapist will supply the reconditioning officer with such details as:

b. Factors to be considered in proper placement in work therapy.

(1) Patient's interests.

(2) Past occupational experience and classification, WD, AGO Form 20 (Soldier's qualification card).

(3) Placement possibilities within the hospital. Upon the written prescription of the supervising reconditioning officer, the occupational therapist will interpret each patient's physical limitations in a particular assignment. Special needs for physical development or precautions will be explained to the job supervisor and frequent industrial rounds will be made to insure proper understanding of the assignment.

62. MECHANICS OF INDUSTRIAL THERAPY. a. **Job survey and job standards.** The hospital must be surveyed for the number and kinds of jobs available. There must be specifically planned duties with definite work standards for the patients assigned.



Figure 56. Group of patients in woodworking shop.

b. Job analysis. Each job is analyzed as to the use or avoidance of the following:

- (1) Position—sitting, standing, walking.
- (2) Use of one hand, both hands.
- (3) Reaching, bending, stooping, lifting, pushing.
- (4) Solitary or group work.
- (5) Indoors or outdoors.
- (6) Degree of supervision.
- (7) Concentration.
- (8) Responsibility.



Figure 57. Patient with leg injury utilizes his drafting skill in the Engineer's office.



Figure 58. Army clerk assigned to the mess office to test work tolerance.

c. Quotas. Quotas of patients on a specific work therapy detail should be higher than the number necessary to carry the work in order to maintain the required attendance. Treatments, consultations, conferences, and passes which are of primary importance to the welfare of patients take precedence over their work assignments and render their attendance uncertain. However, careful planning and cooperation in all departments as to appointments will allow for general covering of allotted patient quotas in the respective jobs. A patient should not be placed until the initial work-up has been completed nor before he can be expected to work with reasonable regularity.

d. Unit supervision. The personality, interest, and cooperation of the supervising personnel is of great importance in a program of this type. When the personnel understand the treatment idea back of patient help, plan work for the patients, tolerate limitations in work abilities, and know daily who is on the job, the assignment has value.

63. PREVOCATIONAL ACTIVITIES IN CONVALESCENT HOSPITALS.

There may be additional opportunities for industrial assignments in connection with the educational program. Here courses in business administration, motor mechanics, electronics, wood and metal shop practice are given. The exploratory shop work will be coordinated with classroom instruction. This offers an opportunity to explore aptitudes and interests. These may later be used as the basis for vocational assignment as to possible employment activities or may serve as a basis for referral to the Veterans' Administration. The latter organization provides vocational training for those who have acquired a handicap in the course of their military service which necessitates retraining in a new vocation.

CHART V.
SUGGESTED ACTIVITY ACCORDING TO DISABILITY

<i>Part involved</i>	<i>Activity indicated</i>
Fingers	Writing letters for patients, charting temperatures for nurses, carrying trays, radio and electrical repair, typing in offices, clerical work, motor repair.
Hand	Motor repair, painting, furniture repair, carpentry shop, gardening (spading, hoeing, raking, weeding), construction work.
Wrist	Cleaning food carts, carrying food trays, moving beds, cleaning floors, pushing wheel chairs, spading, masonry, carpentry, electrical and radio repair, motor mechanics, painting.
Forearm	Carpentry, motor mechanics, painting, gardening, digging on construction jobs.
Elbow	Sweeping and dusting on the ward, digging on construction work, landscaping, sawing wood.
Upper arm	Moving furniture about the ward, policing the grounds, gardening, construction projects, salvage, moving stock.
Shoulder	Dusting ward woodwork, care of information bulletin boards, painting, sawing, gardening, construction.
Back	General ward and barracks duty, messenger service, counter service, gardening, construction projects.
Chest	Care of information bulletin boards, painting, care of motorized equipment, such as washing cars.
Heart	Clerical work, office administration, reception or information desk, answering telephone, dispatcher.
Abdomen	Policing the ward and barracks, clerical work, moving stock, driver in a motor pool, carpenter, gardener.
Hip	Messenger service, physical education instructor, gardening, motor mechanics, bicycle messenger, supervisor of recreational games.
Knee	Ward service, messenger service, bicycle messenger, gardening, construction projects, supervisor of military drills.
Foot	General ward duty, pushing wheel chairs and carts, motor pool driver, printing press operator (foot treadle), physical education instructor, gardening.

CHART VI. TABULATION SHOWING INTERPLAY OF FACTORS
COMPOSING AN INDUSTRIAL PLACEMENT

Civilian skill	Military skill	Disability	Assignment desired by patient	Assignment	Grade
Chain store manager	Paratrooper	Fractured tibia	Carpentry	Carpentry	A
Ship fitter	Rifleman	Allergy	Electrical work	Electrical shop	A
Student-electricity	Heavy truck driving— Warehouse foreman	Joint mice knee	Plumbing	Plumbing	A
Spot welder	Basic	Fractured left elbow-tender	Sign painting	Sign painting	A
Sign painter	Coast Artillery office clerk	Allergy	Any job	Quartermaster	B
Clerical work	Military Police	Gun shot wound left leg	No preference	Warehouse checker	C
Truck driver	Cook	Fracture lower extremity	No preference	Outside detail for muscle strengthening of leg	C
Pick and shovel job	Litter bearer	Dermatitis	No preference	Messenger dispatcher	B
Bartender	Code and dispatching messenger service	T. B. Arrested	No preference	Assistant to Public Relation Officer	B
Selling and appraising jewelry	Personnel work	Malaria	No preference	Orthopedic mechanic shop	B
Auto mechanic	Clerk	Neuro circulatory Asthenia	Orthopedic mechanic shop		B
Orthopedic mechanic	Orthopedic mechanic	Fracture of vertebrae	Sitting job	Typist in EENT clinic	B
Typist and student	Construction crew with Engineers	Laceration—right hand; secondary infection	Butcher shop	Mess: Butcher shop	A
Butcher	Mess	Rheumatic fever	Outdoor work		
Motor repair	British Army: Infantry		Something to strengthen right hand and arm	Victory gardening	A
Radio repair	Radio repair		Radio repair	Radio repair	A
				Ward supervision of linen rooms.	
Driller-oil fields	Coast Artillery	Sciatic nerve	No preference	Reconditioning ward	B
Farmer	Infantry	Mental deficient	Outdoor work	Victory garden	B

Storage battery electrician	Auto mechanic	Fractured	Job to exercise hip	Foreman of auto repair detail	A
College student	Clerical work	Semilunar cartilage	Newspaper work	Editor of patient's hospital paper	B
Baker	Cavalry	Lower extremity	Bakery	Bakery	B
Draftsman	Antiaircraft	Arthrotomy	Drafting	Drafting—Post Engineer's Office	B
Clerk	Antiaircraft	Fracture left fibula	Warehouse job	Medical supply warehouse-clerk	A
Soda dispenser	Ground crew mechanic	Chronic arthritis	No preference	Light carpentry	C
Lathe operator	A. T. Command	Convolvescing from cataract scars of cornea. Defective heating	Garage mechanic	Garage mechanic	B
Garage mechanic	Infantry	Sinus trouble	Orthopedic shop	Orthopedic mechanic	B
Driver—Caterpillar tractor—trucks	Blacksmith demolition	Drawing injection finger third finger right hand	Electrical work	shop—forging, bending steel braces	B
Electrical work	Electrical repair	Jaw infection	Warehouse	Electrical shop	A
Grocery clerk	Engineer warehouse supply	Gun shot wound	Carpentry	Engineer warehouse	A
Carpenter	Company carpenter	left leg	Garden	Carpentry	A
Mill worker	Signal Corps	Fractured elbow wired	Mess-kitchen	Garden	C
Short order cook	Defense artillery	Psychoneurosis	Driving	Mess-kitchen	D
Truck driver	Machine combat	Fracture	Electrical work	Truck driver for outside detail	C
Carnival worker: Owned ferris wheel	Cook	Pulmonary tuberculosis	Electrical work	Electrical work with electrician	A
Bookkeeper accountant	Clerical work: Bookkeeping, accounting, etc.	Malaria	Office job	Finance Office: Accounting Bookkeeping	A
House painter	Infantry	Fracture fibia and fibula	Painting	Assigned to hospital painter—painting wards, etc.	A

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